REMARKS

Claims 1-5 are pending in the present application.

Prior Art Based Rejections

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Feinstein et al. (US 4,142,036). Applicants respectfully traverse the rejection.

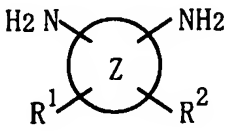
In describing the requirements for rejection of a claim by anticipation, the Manual of Patent Examining Procedure (Section 2131) states:

> "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (ref. omitted). The identical invention must be shown in as complete detail as is contained in the... claim (ref. omitted)."

Furthermore, in *Ex Parte Levy*, 17 USPQ2d 1461 (BOPAI, 1990), the Board of Patent Appeals and Interferences has written:

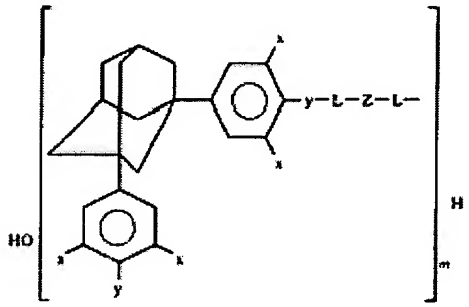
> "Moreover, it is incumbent upon the Examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference (ref. omitted)."

Upon careful consideration of Feinstein et al., it is clear that Feinstein et al. fail to teach or fairly suggest all of the limitations of the present invention. For example, Feinstein et al. fail to teach or fairly suggest the presently claimed aromatic polyamine represented by the following Formula (2):



(2)

Feinstein et al. generically teach the formation of the following polymer:



wherein "L" can be -NH- and "Z" can be an "aromatic moiety". Accordingly, the "Z" moiety of Feinstein et al. is essentially equivalent to the inventive Formula (2) when the "Z" moiety of Feinstein et al. is an "aromatic moiety".

However, the "Z" moiety of Feinstein et al. does not have the specific substituents of Formula (2), as presently claimed. Specifically, the Formula (2) recites that "R^1 and R^2 are each a substituent bound to Ring Z, may be the same as or different from each other and are each an amino group, a mono-substituted amino group, a hydroxyl group or a mercapto group".

At column 6, lines 37-53, Feinstein et al. define the types of "aromatic moieties" and their substituents included in the "Z" moiety as follows:

> "aromatic radicals characterized by at least one benzene ring, i.e., the six-carbon ring of benzene or the condensed six-carbon rings of the other aromatic radicals such as naphthylene, phenanthrylene, anthrylene, etc. The term "aromatic moiety" is further defined as including radicals containing two benzene rings joined by a group such as a methylene group, either, sulfone, sulfide group, etc. Examples of these radicals are phenylene, biphenylene, diphenylene ether, diphenylene methane, diphenylene sulfone, and diphenylene sulfide. One or more hydrogens of the aromatic nucleus can be replaced by non-reactive radical groups such as lower alkyls, halogens and nitro radicals. For purposes of this invention,

the term 'alkylene' is defined as including groups having 2 to 20 carbon atoms in the alkylene chain."

Also, at column 8, lines 13-26, Feinstein et al. teach that the linkers "L-Z-L" can include arylene groups. However, similar to the disclosure at column 6, lines 37-53, Feinstein et al. clarify the substituents of the arylene groups and these substituents do not overlap with the inventive groups R^1 and R^2 of Formula (2). Specifically, Feinstein et al. teach:

> "Suitable arylene groups containing 6 to 24 carbon atoms include paraphenylene, orthophenylene, N,N-diphenyleneamine, oxydiphenylene, etc.
>
> The high molecular weight polyamides can be prepared by well-known methods. These methods include reacting a dicarboxylic acid or its derivatives such as acid chlorides with alkylene and arylene diamines, diisocyanates, diisothiocyanates and their derivatives. For example, polyamides can be prepared from the free acid (1,3-di(4-carboxyphenyl)adamantane) and difunctional nitrogen-containing compounds such as diphenylmethane-4,4'-diisocyanate, diphenylether-4,4'-diisocyanate, 4,4-diaminiodiphenylmethane, paraphenylene diamine, etc."

Since Feinstein et al. fail to teach or fairly suggest compounds of Formula (2), the presently claimed invention is not anticipated by Feinstein et al.

Furthermore, the specific compounds of inventive Formula (2) effect improved properties in the final composition when used as a material for dielectric films.

One of the important feature of the present invention is that a nitrogen-containing ring is formed as a result of the reaction between carboxyl group in an adamantanepolycarboxylic acid, and amino group and R^1 (or R^2) in Ring Z.

For example, a 5-membered azole ring is formed as a result of the reaction between an aromatic polyamine having R^1 (or R^2) at the alpha-position of the carbon atom having $-NH_2$ (amino group) in Ring Z, and an adamantanepolycarboxylic acid. More specifically, an imidazole ring is formed when R^1 is an amino group or mono-substituted amino group; an oxazole ring is formed when R^1 is hydroxyl group; and a thiazole ring is formed when R^1 is a mercapto group.

A 6-membered nitrogen-containing ring is formed as a result of the reaction between an aromatic polyamine having R^1 (or R^2) at the beta-position of the carbon atom having $-NH_2$ (amino group) in Ring Z, and an adamantanepolycarboxylic acid. More specifically, a hydrodiazine ring is formed when R^1 is an amino group or a mono-substituted amino group; an oxazine ring is formed when R^1 is a hydroxyl group; and a thiazine ring is formed when R^1 is mercapto group.

Feinstein et al. fail to disclose these rings which are formed as a result of polycondensation reaction. Feinstein et al. illustrate some compounds which react with adamantanepolypheny1carboxylic acid to yield condensation polymers in column 6 line 63 ~ column 7 line 13 and column 8 lines 2~26. However, none of these compound has the ability to form the azole ring or the 6-memberd nitrogen-containing ring as mentioned above.

A material for dielectric film of the present invention can form a highly crosslinked polymer film having crosslinks in three directions with the adamantine skeleton as vertexes (crosslinking points), by using an adamantanepolycarboxylic acid having three functional groups.

By contrast, Feinstein et al. mention that the adamantane polyphenyl carboxylic acid compounds containing **two** acyl moieties can be used to produce high molecular weight condensation polymers, and the product polymer is essentially linear (column 5 line 51~), though he discloses some adamantane polyphenylcarboxylic acid containing three or more functional groups.

The material for the dielectric film of the present invention can form a dielectric film having a satisfactorily low relative dielectric constant. Said low relative dielectric constant can be obtained by having an adamantine ring, aromatic ring, and azole ring or 6-membered nitrogen-containing ring, and these rings provide a multitude of uniformly dispersed molecular-scale voids in the film.

The examiner mentions that

> *Feinstein teaches the substituted adamantine nucleus when incorporated into a polymer is known to be capable of providing unique physical properties, for example because of the geometric bulk of l,3-dimethyladamantane in its polymers results in rigidity, high thermal stability, high glass transition temperatures, low crystallinity, high heat distortion temperatures and good hydrolytic stability.*

However, there is no mention about relative dielectric constant in Feinstein et al. Accordingly, a *prima facie* case of anticipation cannot be said to exist, since Feinstein et al. fail to teach or fairly suggest a polymerizable composition of an adamantanepolycarboxylic acid in combination with an aromatic polyamine of Formula (2) nor the improved dielectric properties in the final product which are effected by the aromatic polyamine of Formula (2). As such, withdrawal of the rejection is respectfully requested.

Issues - Obviousness-Type Double Patenting Issues

Claims 1-5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of copending application number 10/807,426 (the '426 application).

Applicants note with appreciation that the Examiner has brought to Applicants' attention the fact that there are possibly double patenting issues between the '426 application and the present application. In accordance with MPEP 804(I)(B), Applicants request that the Examiner holds the provisional rejection in abeyance until all other issues are removed. If the "provisional" double patenting rejections in both applications are the only rejections remaining in those applications, the Examiner should then withdraw that rejection in one of the applications (e.g., the application with the earlier filing date) and permit the application to issue as a patent. The Examiner should maintain the double patenting rejection in the other application as a "provisional" double patenting rejection, which will be converted into a double patenting rejection when the one application issues as a patent.

With the above remarks, Applicants believe that the claims, as they now stand, define patentable subject matter such that passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. (Reg.

No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

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Respectfully submitted,

By _____ #43575 for

Gerald M. Murphy, Jr.
Registration No.: 28,977
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Rd
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant